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## MAGNETIC LATCH

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1 Claim

### ABSTRACT OF THE DISCLOSURE

A magnetic latch for a receptacle closure in which the latching function is achieved by plastic members mounted respectively on a receptacle and its closure. The plastic members are permeated with magnetic material magnetized to provide magnetic fields emanating from sequentially alternating pole faces along the plastic members. In closed position of the closure, pole faces of opposite polarity abut each other to provide a magnetic force acting to "latch" the closure. By lateral movement of the plastic members relative to each other, pole faces of like polarity are brought into abutting relationship thereby creating a magnetic force acting to "unlatch" the closure from the receptacle.

### Background of the invention

Magnetic latching devices for cabinet doors, refrigerator doors and other closures are well-known in the prior art. As disclosed in U.S. Patent 2,932,545, such a magnetic latching device may comprise resinous or plastic compounds containing a pulverant magnetic oxide material mixed or blended therein. After the compound is extruded or formed into the desired shape, it is then magnetized to properly orient the domains of the magnetic particles to create a magnetic flux. When extruded or formed into elongated members, the magnetic particles can be so magnetized that the magnetic fields emanate from sequentially alternating pole faces along the extruded or formed members.

If the extruded or formed members are mounted on opposed surfaces, such as the wall of a receptacle and an opposing wall of a closure, so that unlike pole faces are in abutting relation to each other, a magnetic force is created for maintaining the closure in closed position with respect to the receptacle.

If it is desired to separate the two opposite pole faces in a direction normal to their abutting surfaces, the strength of the magnetic field must be relatively weak so that the closure may be opened without the exertion of undue force.

The use of weak magnets, however, has several disadvantages. When used in static structures such as household cabinets, the closures are too easily opened by children thus giving them ready access to areas in which medicines, condiments or alcoholic beverages are stored. When used in dynamic applications such as in automotive vehicles, a sudden shock to the vehicle could result in the closure, such as a glove compartment door, popping open.

It is the object of the present invention to utilize extruded or formed members having strongly magnetized particles. This is accomplished by providing mounting or retaining means which upon proper manipulation of an operating member moves one of the extruded or formed members on either the closure or receptacle surface relative to the other so that the magnetic attraction relationship is changed to a magnetic repulsion relationship.

### Summary of the invention

The present invention relates to a magnetic latch for a receptacle having an opening and a closure for closing the opening. The magnetic latch comprises plastic members formed of magnetic material blended into a plastic material. A first retaining means mounts one of the plastic members on a receptacle surface and a second retaining means mounts another of the plastic members on a closure. The magnetic material in each of the plastic members is magnetized to provide magnetic fields emanating from sequentially alternating pole faces along the plastic members. The plastic members in closed position of the closure are positioned with pole faces of opposite polarity abutting each other thereby providing closed magnetic paths for creating a magnetic force to hold the closure in closed position. A similar structure is disclosed in U.S. Patent 2,932,545. The present invention embodies the improvement comprising the use of at least one retaining means mounting its associated magnetized member for movement relative to the surface on which it is mounted, while the other of the retaining means fixedly holds its associated magnetized member on the surface to which it is mounted. An operating means including an operating member is coupled to the movable plastic member for moving the latter relative to the fixed plastic member in a plane parallel to the abutting surfaces to position like pole faces in abutting relation to each other so that the respective magnetic fields will be in opposition thereby creating a magnetic force urging said closure toward an opened position.

Other objects, advantages and features of the present invention will be made more apparent as this description proceeds, reference being had to the accompanying drawing:

FIG. 1 is a perspective view of a fragmentary portion of a vehicle instrument panel having a glove compartment or receptacle with a door or closure for closing the compartment;

FIG. 2 is a sectional view taken substantially on the line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken substantially on the line 3—3 of FIG. 2;

FIG. 4 is a view in part similar to FIG. 3 illustrating the parts in a second operative position; and

FIG. 5 is a diagrammatic view illustrating the sequentially alternating pole faces of the extruded or formed members as they would be related to each other in closed position of the door.

### Detailed description

Referring now to the drawing, FIG. 1 represents an automotive application of the present invention. A fragmentary portion 11 of an automobile instrument panel is shown having a glove compartment or receptacle 12 therein. The receptacle 12 is adapted to be closed by a hinged door or closure 13 which is hinged to the lower edge of the receptacle frame by any conventional hinge means (not shown). In a conventional installation, the closure 13 would be maintained in closed position by a mechanical latch device of some type. The present invention embodies a magnetic "latching" means for achieving the latching function.

The magnetic latching means comprises plastic members 14 and 15 each of which is extruded or formed of a plastic binder or plastic material permeated with magnetic material such as small particles of barium ferrite. As explained in U.S. Patent 2,932,545, the plastic member, such as the plastic strip 14 or 15, after being extruded or formed into the desired shape is then magnetized to properly orient the domains of the magnet particles to create a magnetic flux.